

Title of The Invention : device and methods for channel coding and rate matching in a communication system
 Appl.No : Patent No :
 Technical Classification : electric/electronic/IT

Overall Evaluation Analysis

W PO Technical Classification Evaluation Analysis

Evaluation Items	Grade	electric/electronic/IT (1,497,484)	electric/electronic/IT (1,437,976)	basic communication process(117,432)
		Percent(%)	Percent(%)	Percent(%)
Strength of Patent Right (35)	AAA	0.8	0.8	0.4
Quality of Technology (35)	AAA	0.4	0.4	0.4
Usability (30)	AAA	0.2	0.2	0.1
Total (100)	AAA	0.8	0.8	0.4

The same application year (1999) evaluation analysis in the W PO technical group

Evaluation Items	electric/electronic/IT (40,345)	electric/electronic/IT (38,872)	basic communication process (2,230)
	Percent(%)	Percent(%)	Percent(%)
Strength of Patent Right	2.7	0.9	0.2
Quality of Technology	0.5	0.5	0.1
Usability	0.2	0.2	0.1
Total	2.6	2.5	0.7

CPC Evaluation Analysis

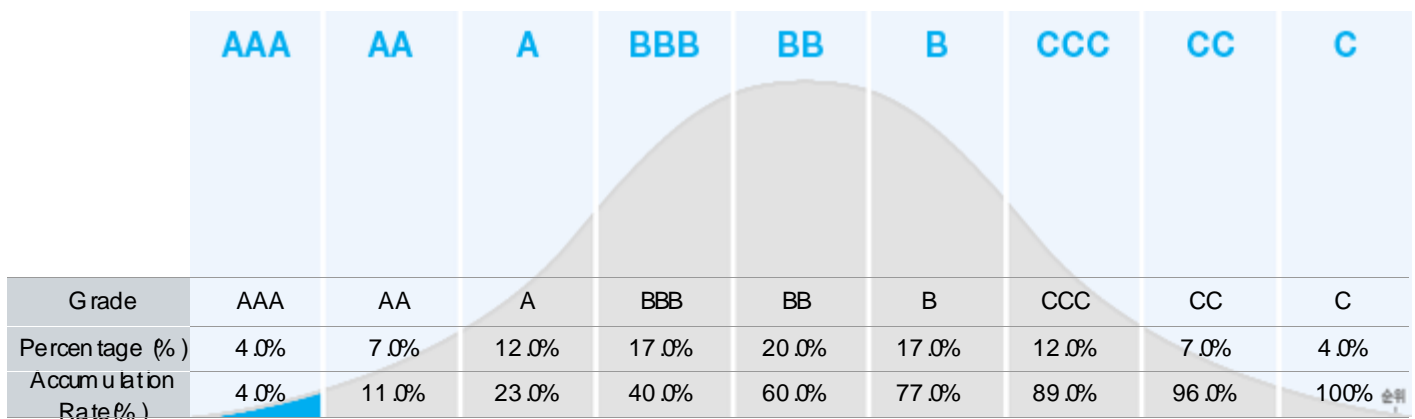
Evaluation Items	H (905,052)	H03(60,488)	H03M (13,002)
	Percent(%)	Percent(%)	Percent(%)
Strength of Patent Right	0.7	0.4	0.4
Quality of Technology	0.5	0.4	0.8
Usability	0.2	0.1	0.1
Total	0.7	0.4	0.4

H : ELECTRICITY, H03: BASIC ELECTRONIC CIRCUITRY, H03M CODING ; ...

* Evaluation analysis by PC and CPC is an analysis data for reference that relatively evaluates the evaluation result of the model corresponding to W PO technical field

Overall Review

Patent No. 06397367, "Device and methods for channel coding and rate matching in a communication system" was evaluated as AAA grade (top 0.8%) in the art. The detailed evaluation items were evaluated as strength of patent right AAA grade (top 0.8%), quality of technology AAA grade (top 0.4%), and usability AAA grade (top 0.2%).



Score-based grades are assigned based on the percentage of all registered patents according to the above grade distribution table.

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Evaluation Analysis by Index

Strength of Patent Right

The strength of patent right was evaluated as "AAA" grade. The number of independent claims is below an average of ordinary skill in the art to which the invention pertains, and the length of independent claims is longer than an average of ordinary skill in the art. The claims consist of apparatus and process claims. The description of the invention is described longer than that of an average of ordinary skill in the art to which the invention pertains. The patent was reissued.

* Strength of patent right means the extent to which the patent is able to maintain monopolistic and exclusive status in patent dispute with a third party.

Quality of Technology

The quality of technology was evaluated as "AAA" grade. The patent is cited from 87 patents, including patents filed up to 6049 days after the filing date of the patent. The patent contains thesis corresponds to the current trend of technology. Forward citation patent cites thesis. Under the CPC level, US patents are decreasing over patents in other subclasses. The patent is a standard essential patent and can guarantee the objective quality of technology. It contains 2 PCs. It contains 17 drawings. The patent is a joint invention of 2

* Quality of technology means the extent to which the patent matches or leads with the technology trend.

Usability

The usability was evaluated as "AAA" grade. Maintenance fee for the window period of 17 years after grant was paid. As a result of international application related to the patent in 7 countries, it is likely to be utilized in business. There is 1 case of continuing application for current business.

* Utilization means the extent to which the patent is utilized in the business and its applicability

Evaluation factor

No	Evaluation factor	Score	No	Evaluation factor	Score
1	US patent growth rate under the CPC level	-0.72	16	Nth year after the date of grant	17
2	Interference	0	17	Priority examination request	0
3	IPC	2	18	Backward citations (thesis)	2
4	RCE	0	19	Average age of citations	21.931
5	Reexamination	0	20	Information provision	0
6	Reissue	1	21	Grant of patent term extension	0
7	PR, PGR in pending	0	22	The average depth of the dependent claims	2.56
8	Continuing application	1	23	Type of claim	2
9	Change in ownership	0	24	forward citations	87
10	The number of drawing sheets	17	25	Standard essential patent	1
11	The length of independent claims	35	26	Filing date difference in forward citation	6,049
12	The number of independent claims	6	27	Forward citations (thesis)	1,065
13	Detailed description of the invention	4,293	28	Concluded reexamination proceedings	0
14	The number of inventors	2	29	Patent family information (states)	7
15	Legal proceeding	0			

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Main patent information

Ownership Change Information

No	Owner	Date of change
1	SAM SUNG ELECTRONICS CO., LTD., KOREA, REPUBLIC OF	1999.06.07

Family Information

No	Family patent number	Filing date	Country	Family type
1	EP1027772A1	1999.06.05	European Patent Office (EPO)	Foreign Family
2	WO9965148A1	1999.06.05	World Intellectual Property Organization (WIPO) (International Bureau of)	Foreign Family
3	DE29924886U1	1999.06.05	Germany	Foreign Family
4	JP3415120B2	1999.06.05	Japan	Foreign Family
5	JP2002518870T	1999.06.05	Japan	Foreign Family
6	RU2212102C2	1999.06.05	Russian Federation	Foreign Family
7	KR20000005958A	1999.06.05	Republic of Korea	Foreign Family
8	KR100334819B1	1999.06.05	Republic of Korea	Foreign Family
9	BR9906479A	1999.06.05	Brazil	Foreign Family
10	CN1496022A	1999.06.05	China	Foreign Family
11	CN1496011A	1999.06.05	China	Foreign Family
12	CN1272252A	1999.06.05	China	Foreign Family
13	CN1148882C	1999.06.05	China	Foreign Family
14	CN100466483C	1999.06.05	China	Foreign Family
15	CN100338885C	1999.06.05	China	Foreign Family

Forward Citation Information

No	Patent No	Country	Title Of The Invention	Filing Date	Applicant	Assignee
1	US9065486B2	U.S.	Detection, avoidance and/or correction of problematic puncturing patterns in parity bit streams used when implementing turbo codes	2014.06.10	NTER DIGITAL TECHNOLOGY	SIGNAL TRUST FOR WIRELESS INNOVATION, DELAWARE
2	US9047213B2	U.S.	Coding architecture for multi-level NAND flash memory with stuck cells	2014.03.14	SK HYNIX MEMORY SOLUTIONS INC.	SK HYNIX MEMORY SOLUTIONS INC.
3	US8788920B2	U.S.	Detection, avoidance and/or correction of problematic puncturing patterns in parity bit streams used when implementing turbo codes	2013.01.18	NTER DIGITAL TECHNOLOGY	SIGNAL TRUST FOR WIRELESS INNOVATION, DELAWARE
4	US9225465B2	U.S.	Method for configuring a telecommunication system	2012.09.14	BLACKBERRY CORPORATION, DELAWARE	BLACKBERRY CORPORATION, DELAWARE
5	US9220112B2	U.S.	Method, device, and system for multiplexing data with selected modulation and coding schemes	2012.07.06	HUAWEI TECHNOLOGIES, CO., LIMITED	HUAWEI TECHNOLOGIES, CO., LIMITED

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No	Patent No	Country	Title Of The Invention	Filing Date	Applicant	Assignee
6	US8619889B2	U.S.	Method and apparatus for transmission of uplink control signaling and user data in a single carrier orthogonal frequency division multiplexing communication system	2012.03.29	MOTOROLA MOBILITY, NC	MOTOROLA MOBILITY, NC
7	US8467292B2	U.S.	Method for configuring a telecommunication system	2012.01.17	RESEARCH IN MOTION	BLACKBERRY CORPORATION, DELAWARE
8	US8483060B2	U.S.	Method for configuring a telecommunication system	2011.12.23	RESEARCH IN MOTION	MELCO MOBILE COMMUNICATIONS EUROPE
9	US8359520B2	U.S.	Detection, avoidance and/or correction of problematic puncturing patterns in parity bit streams used when implementing turbo codes	2011.12.02	INTERDIGITAL TECHNOLOGY	SIGNAL TRUST FOR WIRELESS INNOVATION, DELAWARE
10	US8751907B2	U.S.	Joint encoding and decoding methods for improving the error rate performance	2011.02.14	KING SAUD UNIVERSITY	KING SAUD UNIVERSITY
11	US8843799B2	U.S.	Serial processing method, parallel processing method of bit rate matching and device thereof	2010.09.28	ZTE NC.	ZTE NC.
12	USRE043622E	U.S.	Method for matching rate in mobile communication system	2010.07.21	LG ELECTRONICS, NC.	LG ELECTRONICS, NC.
13	US8634345B2	U.S.	Uplink control information (UCI) multiplexing on the physical uplink shared channel (PUSCH)	2010.06.18	SHARP LABORATORIES OF AMERICA	SHARP, KABUSHIKI, KAWASHI
14	US7899016B2	U.S.	Physical layer processing for a wireless communication system using code division multiple access	2010.04.12	INTERDIGITAL TECHNOLOGY	INTERDIGITAL TECHNOLOGY
15	US7987410B2	U.S.	Systems and methods for decreasing latency in a digital transmission system	2010.02.25	XOCYST TRANSFER AG LLC.	INTELLECTUAL VENTURES I, LIMITED LIABILITY COMPANY
16	US8737495B2	U.S.	Digital broadcasting transmission and/or reception system to improve receiving performance and signal processing method thereof	2009.11.13	SAMSUNG ELECTRONICS, CO.	SAMSUNG ELECTRONICS, CO.
17	US8050347B2	U.S.	Digital broadcast transmitting/receiving system having an improved receiving performance and signal processing method thereof	2009.10.01	SAMSUNG ELECTRONICS, CO.	SAMSUNG ELECTRONICS, CO.
18	US8107548B2	U.S.	Digital broadcast transmitting/receiving system having an improved receiving performance and signal processing method thereof	2009.10.01	SAMSUNG ELECTRONICS, CO.	SAMSUNG ELECTRONICS, CO.
19	US8199839B2	U.S.	Digital broadcast transmitting/receiving system having an improved receiving performance and signal processing method thereof	2009.10.01	SAMSUNG ELECTRONICS, CO.	SAMSUNG ELECTRONICS, CO.
20	US8418018B2	U.S.	Hierarchical trellis coded modulation	2009.09.24	KANOS COMMUNICATIONS	CONEXANT SYSTEMS, NC
21	US7920651B2	U.S.	Joint symbol, amplitude, and rate estimator	2009.06.25	BAE SYSTEMS INFORMATION AND ELECTRONIC SYSTEMS INTEGRATION, NC	COLLISION COMMUNICATIONS, NC., NEW HAMPSHIRE
22	US8898547B2	U.S.	Rate control adaptable communications	2009.05.09	BROADCOM	BROADCOM
23	US7814391B2	U.S.	Rate matching method in mobile communication system	2009.03.06	LG ELECTRONICS, NC.	LG INFORMATION & COMMUNICATIONS, LTD
24	US7814390B2	U.S.	Rate matching method in mobile communication system	2009.03.06	LG ELECTRONICS, NC.	LG INFORMATION & COMMUNICATIONS, LTD
25	US7827466B2	U.S.	Rate matching method in mobile communication system	2009.03.06	LG ELECTRONICS, NC.	LG ELECTRONICS, NC.
26	US8719670B1	U.S.	Coding architecture for multi-level NAND flash memory with stuck cells	2008.11.19	SK HYNIX MEMORY SOLUTIONS NC.	SK HYNIX MEMORY SOLUTIONS NC.
27	US7583757B2	U.S.	Joint symbol, amplitude, and rate estimator	2008.10.15	BAE SYSTEMS INFORMATION & ELECTRONIC SYSTEMS INTEGRATION, NC.	COLLISION COMMUNICATIONS, NC., NEW HAMPSHIRE
28	US7590203B2	U.S.	Joint symbol, amplitude, and rate estimator	2008.10.15	BAE SYSTEMS INFORMATION & ELECTRONIC SYSTEMS INTEGRATION, NC.	COLLISION COMMUNICATIONS, NC., NEW HAMPSHIRE

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No	Patent No	Country	Title Of The Invention	Filing Date	Applicant	Assignee
29	US8510609B2	U.S.	Apparatus and method for rate dematching in a communication system	2008.08.22	SAM SUNG ELECTRONICS, CO.	SAM SUNG ELECTRONICS, CO.
30	US7590187B2	U.S.	Digital broadcasting transmission and/or reception system to improve receiving performance and signal processing method thereof	2008.07.18	SAM SUNG ELECTRONICS, CO.	SAM SUNG ELECTRONICS, CO.
31	USRE041753E	U.S.	Method for matching rate in mobile communication system	2008.06.03	LG ELECTRONICS, INC.	LG ELECTRONICS, INC.
32	US8619901B2	U.S.	Systems and methods for providing unequal message protection	2008.04.25	SHARP LABORATORIES OF AMERICA	SHARP, KABUSHIKI, KAISHA
33	US8073016B2	U.S.	Apparatus and method for channel coding and multiplexing in CDMA communication system	2008.04.22	SAM SUNG ELECTRONICS, CO.	SAM SUNG ELECTRONICS, CO.
34	USRE041590E	U.S.	Method for matching rate in mobile communication system	2008.03.31	LG ELECTRONICS, INC.	LG ELECTRONICS, INC.
35	US8347188B2	U.S.	Error correction methods and apparatus for mobile broadcast services	2008.02.27	SPREADTRUM COMMUNICATION CO., LTD.	SPREADTRUM COMMUNICATIONS CO., LTD.
36	US8064525B2	U.S.	Method and apparatus for transmitting data frames, and a method and apparatus for data rate matching	2007.12.13	SIEMENS AKTIEGESELLSCHAFT	INTELLECTUAL VENTURES - INVENTION INVESTMENT RELA
37	US7855964B2	U.S.	Communication method and apparatus and base station	2007.10.30	MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC
38	US7864680B2	U.S.	Communication apparatus and method	2007.10.30	MITSUBISHI ELECTRIC	BLACKBERRY CORPORATION, DELAWARE
39	US8111621B2	U.S.	Method for configuring a telecommunication system	2007.10.30	RESEARCH IN MOTION	BLACKBERRY CORPORATION, DELAWARE
40	US8385405B2	U.S.	Recorded medium having program for coding and decoding using bit-precision, and apparatus thereof	2007.10.19	HUMAX CO., LTD.	HUMAX CO., LTD.
41	US8074143B2	U.S.	Detection, avoidance and/or correction of problematic puncturing patterns in parity bit streams used when implementing turbo codes	2007.10.12	INTEGRAL TECHNOLOGY	SIGNAL TRUST FOR WIRELESS INNOVATION, DELAWARE
42	US8223854B2	U.S.	Method and apparatus for transmission of uplink control signaling and user data in a single carrier orthogonal frequency division multiplexing communication system	2007.09.25	MOTOROLA MOBILITY, NC	MOTOROLA MOBILITY, NC
43	US7792022B2	U.S.	Method and apparatus for de-rate matching in communication system	2007.08.10	ELECTRONICS & TELECOMMUNICATIONS RESEARCH INSTITUTE	ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE
44	US8332734B2	U.S.	Rate matching device and method for a data communication system	2007.05.14	SAM SUNG ELECTRONICS, CO.	SAM SUNG ELECTRONICS, CO.
45	US7987414B2	U.S.	Rate matching device and method for a data communication system	2007.05.14	SAM SUNG ELECTRONICS, CO.	SAM SUNG ELECTRONICS, CO.
46	US8028222B2	U.S.	Apparatus and method for improving turbo code performance in a communication system	2006.10.12	SAM SUNG ELECTRONICS, CO.	SAM SUNG ELECTRONICS, CO.
47	US8019011B2	U.S.	Digital broadcast transmitting/receiving system having an improved receiving performance and signal processing method thereof	2006.07.12	SAM SUNG ELECTRONICS, CO.	SAM SUNG ELECTRONICS, CO.
48	US7627803B2	U.S.	System and method for variable forward error correction (FEC) protection	2006.07.05	HARRIS CORP	HARRIS CORP
49	US7712012B2	U.S.	Method of configuring transmission in mobile communication system	2006.06.29	LG ELECTRONICS, INC.	LG ELECTRONICS, INC.
50	US8271848B2	U.S.	Method of decoding code blocks and system for concatenating code blocks	2006.04.06	ALCATEL LUCENT	ALCATEL LUCENT